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Notice of Allowability	Application No.	Applicant(s)	
	10/071,908	KINNARD ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the interviews of August 16, 17, 2006.
2. ☒ The allowed claim(s) is/are 1,2,4-21 and 32-36.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>8/16/2006</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>8/16/2006</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Peter R. Hagerty on August 15-17, 2006.

The application has been amended as follows:

IN THE CLAIMS:

1. (Currently Amended) A reactor assembly comprising:

a base unit;

a chuck assembly disposed in a cavity of the base unit, wherein the chuck assembly comprises a support having a surface capable of receiving a substrate;

a process chamber comprising a top wall, a bottom wall, and sidewalls extending therefrom substantially perpendicular to the support surface of said chuck assembly, and a cylindrical opening extending through the bottom wall to the top wall defining a substantially cylindrically shaped interior region having a central axis extending substantially perpendicular to the support surface of said chuck assembly, wherein the process chamber is coupled to the base unit;

an inlet manifold assembly in fluid communication with a first sidewall opening of the process chamber in a selected one of the sidewalls, wherein the inlet manifold assembly comprises a triangularly shaped flow-shaping portion adapted to laterally elongate a gas and/or a reactant flow into the process chamber, wherein the fluid communication between the inlet manifold assembly and the first sidewall opening of the process chamber is free from a baffle plate; and

an exhaust manifold assembly in fluid communication with a second sidewall opening of the process chamber in the sidewall diametrically opposed from the selected one of the sidewalls, wherein the first and second sidewall openings define an entire flow path of the gas and/or the reactant flow into and out of the process chamber.

2. (Original) The reactor assembly according to Claim 1, wherein the flow-shaping portion of the inlet manifold assembly is adapted to introduce the gas and/or reactant flow into the process chamber at about a plane parallel to a surface of the substrate.

3. (Canceled)

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4. (Original) The reactor assembly according to Claim 1, wherein the top wall of the process chamber is removable.
5. (Previously Presented) The reactor assembly according to Claim 1, wherein a bottom wall of the base unit is adapted to be stackedly attached to a second reactor assembly.
6. (Original) The reactor assembly according to Claim 1, wherein the exhaust manifold assembly is adapted to receive the gas and/or reactant flow from the process chamber at about a plane parallel to the surface of the substrate.
7. (Original) The reactor assembly according to Claim 1, wherein the exhaust manifold assembly comprises an exhaust receiving portion and a flow restrictor, wherein the flow restrictor is affixed to an opening of the exhaust receiving portion and is adapted to restrict the gas and/or reactant flow through the opening from the process chamber into the exhaust receiving portion.
8. (Original) The reactor assembly according to Claim 1, wherein the support of the chuck assembly comprises a means for regulating a temperature of the substrate.
9. (Original) The reactor assembly according to Claim 1, wherein the support further comprises a resistance heating element and a cooling passage.
10. (Original) The reactor assembly according to Claim 1, wherein the support of the chuck assembly is stationary and non-rotating.
11. (Original) The reactor assembly according to Claim 1, wherein the inlet manifold assembly further comprises a flow restrictor attached to an opening of the flow-shaping portion.
12. (Original) The reactor assembly according to Claim 1, wherein the top wall is substantially transparent to a light source.

13. (Original) The reactor assembly according to Claim 1, wherein the top wall is substantially transparent to a UV light source.

14. (Original) The reactor assembly according to Claim 1, wherein the top wall is substantially transparent to an infrared light source.

15. (Previously Presented) The reactor assembly according to Claim 1, wherein the process chamber includes a third sidewall opening in the sidewall adjacent to the first and second sidewall openings, wherein the third opening is sized for transporting the substrate into an interior region of the process chamber.

16. (Original) The reactor assembly according to Claim 1, further comprising a baffle plate disposed about an opening of the flow-shaping portion.

17. (Original) The reactor assembly according to Claim 7, wherein the exhaust receiving portion is triangularly shaped.

18. (Original) The reactor assembly according to Claim 7, wherein the flow restrictor comprises a plate having at least one passageway.

19. (Original) The reactor assembly according to Claim 7, wherein the flow restrictor comprises a rectangularly shaped plate having a length dimension greater than a height dimension, wherein the passageway is disposed in an area less than or equal to about one half of the height dimension.

20. (Original) The reactor assembly according to Claim 7, wherein the flow restrictor comprises anodized aluminum.

21. (Original) The reactor assembly according to Claim 1, wherein the inlet manifold assembly is adapted to introduce the gas and/or reactants at about a plane parallel to a surface of the substrate and the exhaust manifold assembly is adapted to exhaust the gas and/or reactants at about a plane parallel to a surface of the substrate.

22.-31. (Canceled)

32. (Currently Amended) A reactor assembly comprising:

a base unit;

a chuck assembly disposed in a cavity of the base unit, wherein the chuck assembly comprises a support having a surface capable of receiving a substrate;

a process chamber comprising a transparent top wall, a bottom wall, and sidewalls extending therefrom, and a cylindrical opening extending through the bottom wall to the top wall to define a substantially cylindrically shaped interior region, wherein the process chamber is coupled to the base unit;

a light source assembly in operable communication with the transparent top wall for projecting radiation into the process chamber;

an inlet manifold assembly in fluid communication with a first sidewall opening of the process chamber in a selected one of the sidewalls, wherein the inlet manifold assembly comprises a triangularly shaped flow-shaping portion adapted to laterally elongate a gas and/or a reactant flow into the process chamber, wherein the fluid communication between the inlet manifold assembly and the first sidewall opening of the process chamber is free from a baffle

an exhaust manifold assembly in fluid communication with a second sidewall opening of the process chamber in the sidewall diametrically opposed from the selected one of the sidewalls, wherein the first and second sidewall openings define an entire flow path of the gas and/or the reactant flow into and out of the process chamber.

33. (Previously Presented) The reactor assembly of Claim 32, wherein the light source assembly comprises a housing and a light source.

34. (Original) The reactor assembly of Claim 32, wherein the top wall comprises a quartz material.

35. (Original) The reactor assembly of Claim 32, wherein the exhaust manifold assembly is adapted to receive the gas and/or reactant flow from the process chamber at about a plane parallel to a surface of the substrate.

36. (Original) The reactor assembly of Claim 32, wherein the transparent top wall is removable.

Allowable Subject Matter

2. Claims 1, 2, 4-21, and 32-36

3. The following is an examiner's statement of reasons for allowance: The Examiner has reconsidered the pending rejections in light of Applicant's May 26, 2006 appeal brief. Further, the Examiner has consulted with Supervisory Patent Examiner Hassanzadeh and quality assurance specialist Gregory Mills for advice and opinions on the Examiner's rejections and the teachings in the cited prior art. As a result, it is the Examiner's opinion that the combination of the Halpin (6,143,079) and Tanaka (5,091,207) reference does not result in Applicant's independent claim requirements of "wherein the first and second sidewall openings define an entire flow path of the gas and/or the reactant flow into and out of the process chamber.". Further,

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the reference to Wengert (6,325,858) is addressed in this amendment by amending each of the independent claims to read "...wherein the inlet manifold assembly comprises a triangularly shaped flow-shaping portion adapted ...". The Examiner's reference to Hoke (5,077,875) does show a triangularly shaped inlet manifold, however, as Applicant argues in the May 26, 2006 appeal brief (pages 11-12), Hoke's inlet manifold includes a baffle plate (12; Figure 3), and is thus not "free of a baffle plate" as claimed. The Hoke reference, taken as a whole, requires a baffle plate in his inlet manifold to impart laminar flow across his reactor (columns 7-8). It is the Examiner's opinion that an obviousness rejection including Hoke's inlet manifold assembly must necessarily include Hoke's entire inlet manifold assembly (12, 15a, 14; Figure 3) which Hoke cites as necessary for laminar flow. As a result, obvious-type rejections based on Wengert (6,325,858) in view of Hoke are not supported by the teachings in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

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can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

Parviz Hassanzadeh
8/17/06